Origin could not be determined. It is estimated that silt originated from bare ground areas, such as agricultural fields or construction sites, with the Pleasant Lake subwatershed, while organic material is composed of dead and decaying in-lake and adjacent wetland plant material. Union Township drains approximately 7700 acres of predominantly agricultural ground in Union Township. Specifically, agricultural row crop or pasture land cover 66% of the subwatershed, while grassland, forest, and scrubland cover 13%, wetlands cover 11% and urban land use cover less than 10% of the subwatershed. Approximately 35% of the soils in the subwatershed are mapped as Highly Erodible Land (JFNew 2005)

The LOBOA has actively attempted to reduce the flow of sediment from the watershed to Pleasant Lake. In 1990, the Association completed a watershed diagnostic study which estimated that 2,343 tons of sediment flows from the subwatershed to Pleasant Lake on an annual basis. In 2002, the Association completed an engineering feasibility study regarding the ecological, economical, and social feasibility of installing four water quality improvement projects (JFNew, 2002). Two of these projects were implemented in the two years (JFNew, 2003 and 2004).

## 3.0 DESIGN AND CONSTRUCTION SPECIFICS

### 3.1 public Imput and Landowner Agreements

The Association identified all potential sediment removal areas and prioritized sediment removal from Heston and Bunch outlets as the highest priority. The Association held one public meeting in 2005 to gather input from lake residents. Approximately 16 residents adjacent to the dredging area were contacted through the permitting and public notice process. The Association contracted individuals owning potential dredge spoil basin locations and obtained permission for the use of their land for dredge spoil dewatering. A copy of the signed landowner agreement is included in Appendix B.

### 3.2 SEDIMENT CHARACTERIZATION

Sediment samples were taken by LABOA and taken to the lab in South Bend, In. for analysis of metals. The lab results are in Appendix C. There were no levels of contaminants that exceeded EPA standards.

### 3.3 PERMITTING

A Lake Preservation Permit was required from the IDNR because excavation occurred "lakeward of the lake's legal level or average shoreline". Clean Water Act Section 401 Water Quality Certification from the IDEM and a Section 404 permit from the U.S.Army Corps of Engineers (Corps) were required because water from the dredged material was returned from the sediment dewatering basin to the lake. The IDNR, IDEM, and Corps permits were submitted in 2005. A Rule 5 Erosion Control Permit was obtained from IDEM prior to beginning work on the disposal basin. Permits authorizing the sediment removal are included in Appendix D.

PLEASANT LAKE SEDIMENT REMOVAL PLAN
ST. JOSEPH COUNTY, INDIANA

## 1.0 PROJECT DESCRIPTION AND PURPOSE

The Pleasant Lake Sediment Removal Plan and subsequent dredging was completed as part of a series of projects sponsored by the LABOA Association to improve water quality in Pleasant & Riddles Lakes. The project was designed to improve the aesthetics and usability of Pleasant Lake, which is located in the South end of Lakeville, In., St. Joseph County, Indiana (Figure 1). This report addresses 2 areas identified in the feasibility study for sediment removal and a location for disposal of the dredge material (Figure 2).

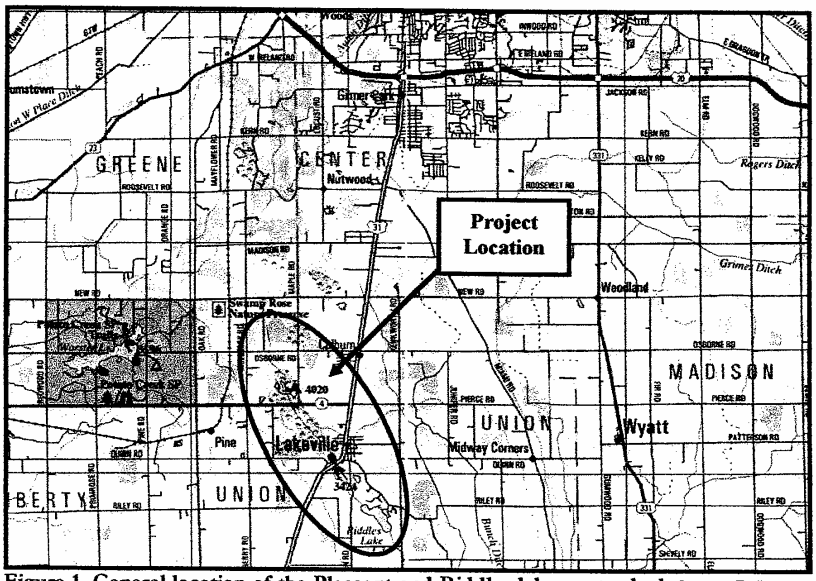
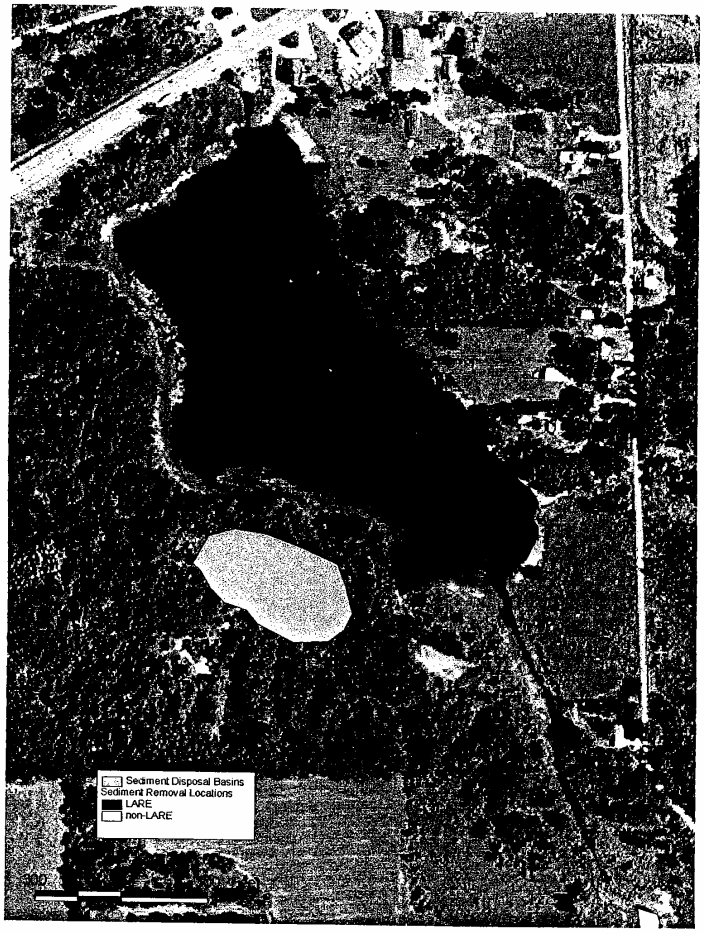



**Figure 1. General location of the Pleasant and Riddles lakes watershed.** Source: DeLorme, 1998.




2.0 DESIGN RATIONALE

The LABOA Improvement Association planned to hydraulically dredge accumulated sediment from two locations within Pleasant Lake during 2005. Approximately 45,000 cubic yards of accumulated sediment in 1.9 acres was subsequently removed from Pleasant Lake near the mouth of Heston and Bunch Creeks during this project. Sediment was removed to an average depth of 7 feet. Sediment removal estimates were generated from sediment depth mapping and field estimates completed by the LABOA Association during the summer of 2005. During field sampling, LABOA Improvement Association used a 2-inch PVC pipe to determine the depth of accumulated organic material or silt within the target area. Specifically, individuals measured water depth accumulated sediment depth, and natural sediment depth. Sediment depth maps are included in ~~Appendix A~~ Attachment 3 & 4 Estimated dredging Areas. Dredging volumes were calculated based on measured sediment depths and

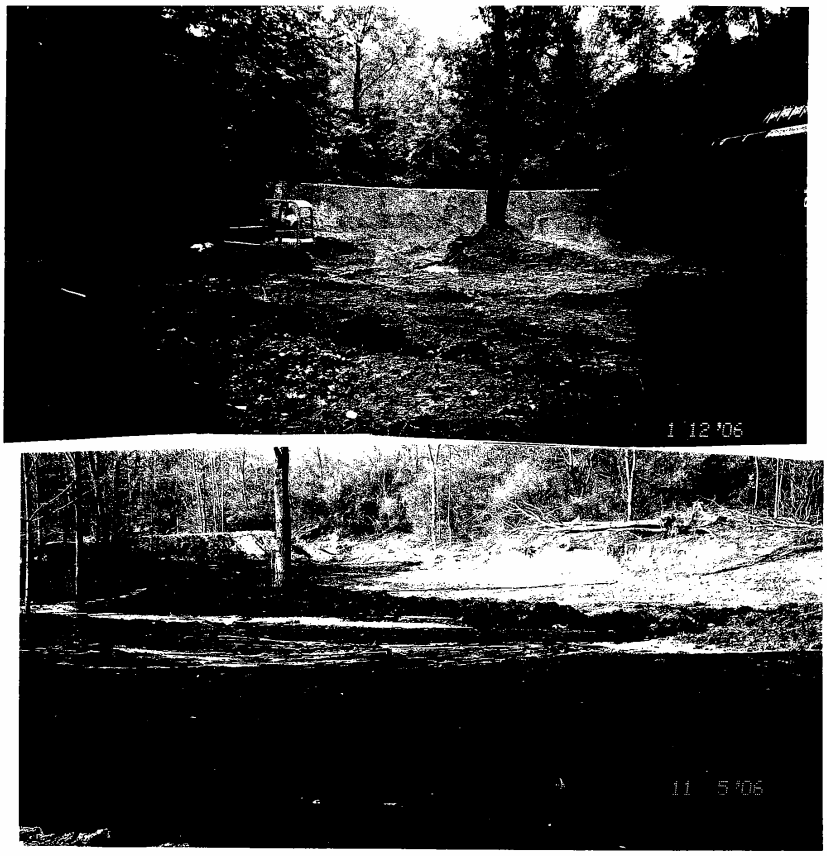



Figure 3: Basin Site during dredging (July 2006) and after completion of pumping in December of 2006.

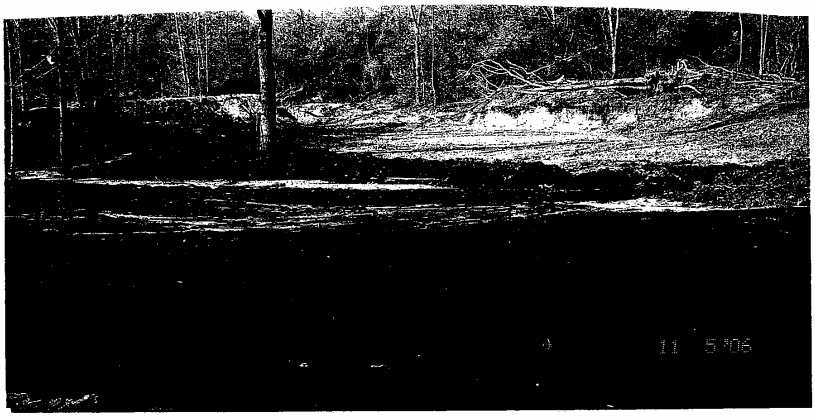
The sediment was dewatered within the basin between December and July 2007 and the spoils were graded to match the surrounding landscape and seeded with grass. Silt fences were removed from the dewatering basin site after seeding had established growth.

3.4 HYDRAULIC DREDGING

Sediment was hydraulically dredged by Dredging technologies, Inc. from the mouth of Bunch & Heston Creeks at Pleasant Lake. Dredging began in September 2006 after the sediment dewatering basin had been constructed. Return pipes were installed through the berm of the basin and ran into another basin. Dredging was completed in December 2006. Daily monitoring of the project was required by the Association to ensure timely completion of dredging, and assist the dredged with various problems that developed during the dredge project. The Association and JFNew completed a post-dredged area contour survey with a graduated PVC pipe; however, a detailed contour map of the dredged area was created with random tests with graduated PVC pipe.


3.5 DEWATERING BASIN

A dewatering basin was constructed prior to the dredging activity. The dewatering basin was constructed by Geyer Excavating with the area identified in Figure 2. Earthen berms were packed. The dewatering basin held approximately 45,000 cubic yards of material by the time the project was complete.



**ATTACHMENT 3**

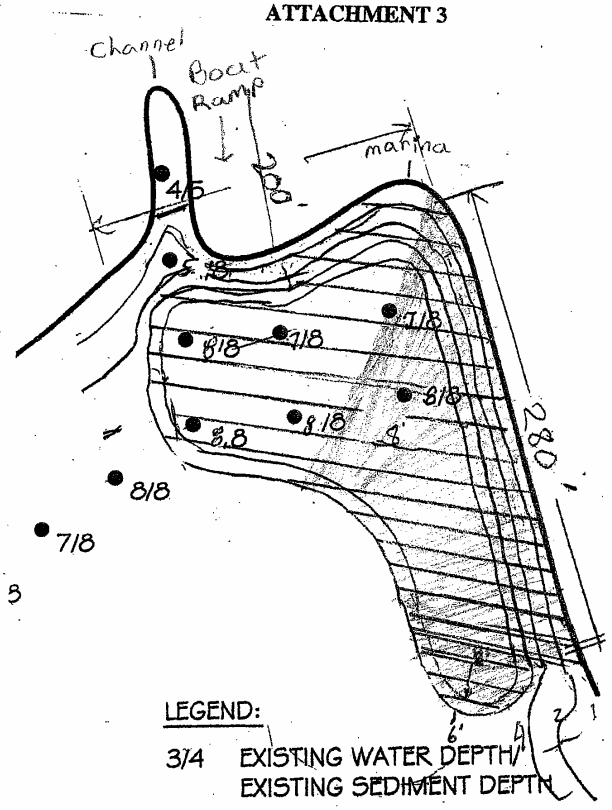



Figure 3: Map of proposed contours for Area 1 (~~West~~ Northern end) Pleasant Lake, Lakeville, St. Joseph County, Indiana.

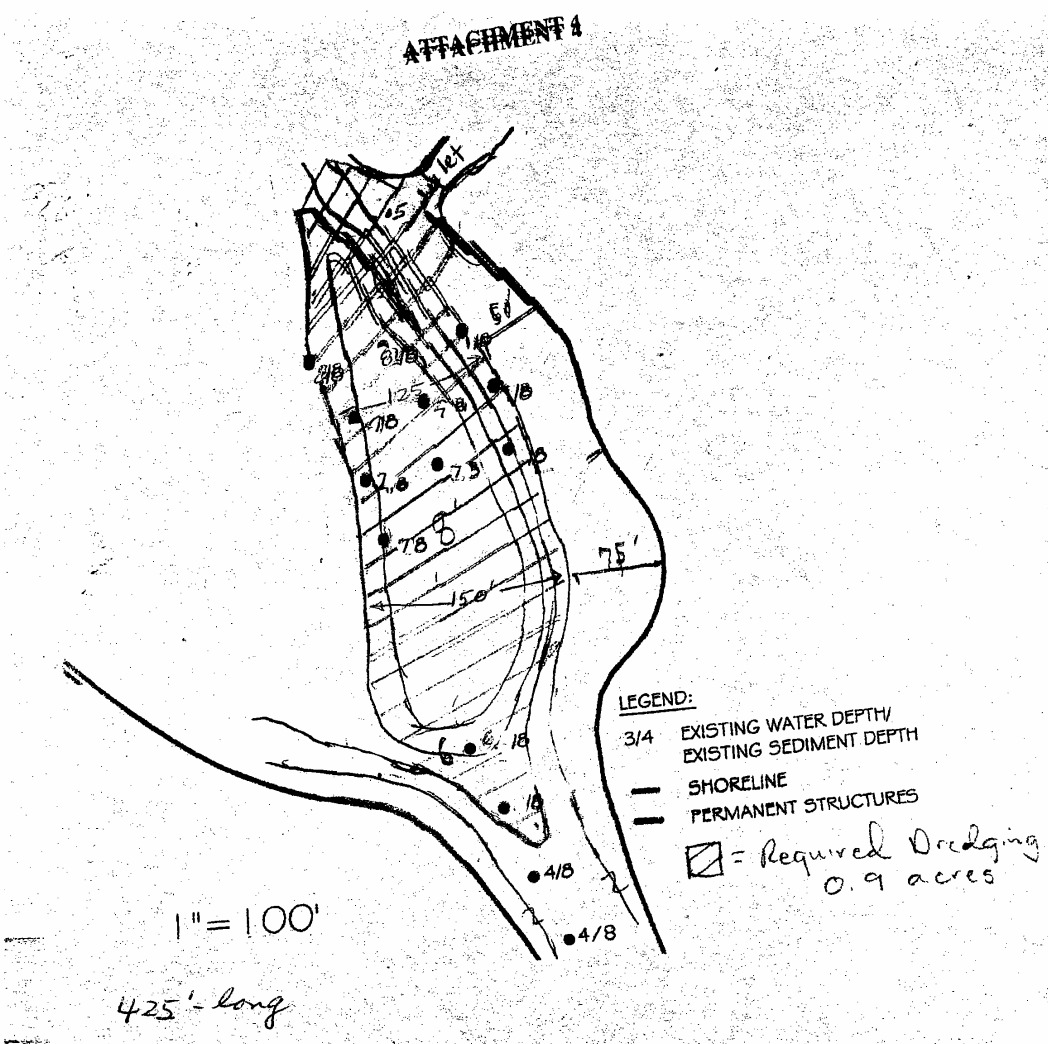



Figure 4: Map of proposed contours for Area 2 (East end) Pleasant Lake, Lakeville, St. Joseph County, Indiana.

4.0 BIDDING REQUIREMENTS, FORMS, AND INFORMATION

The lake association contracted with JFNew and Associates' Inc to administer the bidding process, and monitor project progress. Separate bids were sought for dredging and for the dewatering basin. The dewatering basin included silt fence (or equivalent) installation and dewatering basin construction and removal. The second bid included dewatering pipe and sediment pumping pipe installation and removal, turbidity curtain installation and removal, and hydraulic dredging. An invitation was sent to three bidders for each part of the work. The invitation included specifics regarding the dredging location and volume, sediment disposal basin location and construction details, project specifications, and bid return deadlines.Design specifics, access to the project site, and special construction issues were discussed with the bidders prior to bid submittal. Bid requests were sent out in June 2006 and awarded the bids in July 2006. A signed contract was obtained from each bidder along with insurance information prior to project implementation.

5.0 CONSTRUCTION SCHEDULE

The project was begun on August 2006 with the basin constructed within two weeks. The dredging began in September 2006 and lasted until December 2006.

6.0 COST ESTIMATES

It was estimated that sediment dewatering basin construction would cost $42,000.00. Hydraulic dredging was estimated at $60,000.00. The 3 bids received for dredging was $50,000.00. The contract for administrative oversight was granted to JFNew for $8,000.00 making the total project cost of $100,000.00. The original project estimate was $120,000.00.

7.0 LITERATURE CITED

See our diagnostic Study for references. JFNew - Dec. 2005

Bob E. Seitz 1-8-07

Pres. LaBOA
1.8.07